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Influence of Maternal Knowledge and Skills on Mixed Feeding Practices among Infants below 6 Months in Wajir County

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Abstract

Wajir County is estimation to have 749 deaths of infants below 6 months every year. In 2014, information from KDHS revealed that only 32% of infants below six months are wholly breastfed, their mothers introduce other foods, that is, weans their children instead of exclusive breastfeeding. The purpose of this study was to determine the how the mother/caregiver's knowledge and skills influenced mixed feeding practices among infants below 6 months. The study adopted a descriptive cross- sectional study design in data collection through a quantitative approach, and the study target population comprised all the 802 mothers with infants below six months from which a sample size of 260 respondents was drawn. The data collected were analyzed using the Statistical Package for Social Sciences (SPSS) version 26. It was found that overall, the caregivers' knowledge of all the mixed feeding indicators for a child with normal nutrition status was low. The knowledge was particularly low on continued breastfeeding, minimum meal frequency, minimum dietary diversity, and on how to feed a child during illness. Knowledge score at the time of introduction to mixed feeding and on giving vitamin A-rich fruits and vegetables was however high. It was recommended that the county Department of Health of Wajir, through the nutrition unit, needs to scale up Social Behavior Change Communication (SBCC) on mixed feeding targeting caregivers of children below 6 months of age with appropriate MIYCN information. The primary focus should be on continued breastfeeding, minimum meal frequency, and minimum dietary diversity.

Keywords: *Maternal, infant and young child feeding practices, Exclusive breastfeeding, knowledge and skills, & mixed feeding*

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1.0 INTRODUCTION

Exclusive breastfeeding for six months is considered the hallmark of healthy babies. It is also noted to reduce morbidities and mortalities associated with nutrition associated diseases. According to Lancet Child Survival Series (2021), appropriate Infant and Young Child Nutrition (breastfeeding and complementary feeding) affect child mortality by 19% compared to any other methods of controlling infant deaths. It is a priority of all public health departments to protect, promote and empower all breastfeeding mothers to ensure they exclusively breastfed their infants, Global Strategy for Infant and Young Child Feeding advocates for this. The WHO and UNICEF also recommend that mothers ensure they breastfed their infants within the first hour after birth, they should also ensure that no other foods are introduced to these young ones before they are six months old (Exclusive Breastfeeding (EBF); and also breastfeeding continue up to when a child attains two years or more. In the whole world, exclusive breastfeeding prevents (90% of) the mortality death of children below 5 years in low and middle-income countries (Ahoya et al., 2019).

Lancet's (2021) Series, on Maternal and Child nutrition, when a mother abandons exclusive breastfeeding for 6 months, childhood mortality and morbidity increase (Black et al., 2013). In the same series, it is also revealed that breastfed infants' survival rates are high in their early months in comparison with those infants that are not exclusively breast fed and it is obvious that their mortality rates are 14 times higher. When infants are breastfed from birth, they will automatically have good health thus deaths from acute respiratory infection and diarrhea are minimal.

In 2011, low breastfeeding standards for children who were below five years brought about 804,000 deaths, which is (11.6%) of all deaths (Kimani-Murage et al., 2011). Inappropriate Infant and Young Child Feeding (IYCF) habits, for example, abandoning exclusive breastfeeding, complementary food introduction, and premature weaning make infants suffer from malnutrition and this may cause death, mostly in poor countries. Earlier research reveals that, globally 13% mortality rate of children who are below 5 years is attributed to nonexclusive breastfeeding whereas 6% of death of children under five years is brought about by poor feeding when other foods are introduced to these children, EBF could prevent 13% of deaths in children less than 5 years of age globally, and (Kimiywe & Chege, 2015).

Globally, sub-optimal breastfeeding annually reports 1.4 million deaths in children fewer than five years. This on average means that, in the whole world 38% of infants <6 months are exclusively breastfed (World Health Organization [WH0], 2010). In developing countries, 35% of children less than six months of age are breastfed continuously. 35% of 20-23 months benefit from continued breastfeeding (United Nations Children's Fund [UNICEF], 2013). Although the whole world's breastfeeding has increased, reports show that it is only 49% of children <6 months in developing countries are breastfed exclusively.

In 2010, EBF among infants less than 6 months was at 38% in developing countries, 47% in South Asia, 26% in West and Central Africa, and 45% in Eastern and Southern Africa (Korir, 2013). In East Africa, the EBF rates were better with Rwanda (82.90%), Burundi (70.3%), Uganda (63.2%), Kenya (63%), and Tanzania (52%) (Ahoya et al., 2019).

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This Optimal child complementary feeding is very crucial in child development since it increases nutrition uptake, enhances child growth, and affects the survival rate of children thus reducing mortality deaths on infants. Complementary feeding is the introduction of other foods and supplements rather than breastfeeding only. This is usually done when a child reaches six months when breastfeeding alone is considered not to provide enough nutrients for the growing child.

In this regard, World Health Organization (WHO) gives direction to infant and young child feeding (IYCF) on how children 6–23 months of age should be fed. These guidelines advocate the introduction of complementary foods, the number of different foods to be given, the number of times to be administered, the nutrients status of the diet, and iron-rich or iron-fortified intake foods as some of the eight core indicators for assessing IYCF practices (Maingi et al., 2018).

1.1 Statement of the problem

In Wajir County, previous research gives an estimation of 749 infant deaths every year. This is a result of sub-optimal breastfeeding practices (Wade et al. 2020). Information from KDHS in 2014 depicts that exclusively breastfeeding only 32% of infants below six months. This is because, in Kenya mothers prefer mixed feeding rather than exclusive breastfeeding because of some reasons. This brings a loss of 76 billion in treating major prevention diseases which are attributed to this poor feeding. These are to, name a few, lower respiratory tract infections and gastrointestinal illnesses (Jeelani et al., 2020). These diseases alter growth in infants and bring, nutrition illnesses and this affects this health status at large.

Because of this, it is crucial to provide health education to mothers on the importance of exclusive breastfeeding and dangers that can affect their infants in order to curb and reduce completely morbidity, mortality and this will automatically improve infant health. If this issue is not dealt with on time, Millennium Development Goal 4 may never be achieved or this may take a lot of time to accomplish which aims at bringing down or eliminating mortality deaths of infants who are under five years by two-thirds between 1990 and 2022.

In Wajir County, there is very little scientific data available on the introduction of mixed feeding of infants below 6 months old. This is a very critical stage in an infant's growth so there was a need to introduce improved mixed feeding practices in low–resource settings to enhance the good development of infants at this age. This study, therefore, sought to establish maternal/caregivers' knowledge influencing mixed feeding practices among infants below 6 months in Wajir County.

The objective of the study was; To establish the influence of maternal knowledge and skills on mixed feeding practices among infants below 6 months in WajirCounty

2.0 LITERATURE REVIEW

Malnutrition in children is caused by insufficient feeding practices and non-essential foods during the child's first year of life. A study by Singh (2010) on infants feeding practices which was conducted in Nepal revealed that 50% were able to exclusively breast feed their infants for 5 months, 40.0% introduced a complementary diet before their children reached the required age of 6 months, and 32%, mothers delayed in the introduction of complementary feeding to their infants. Almost all the mothers agreed that breastfeeding is very important and nutritious for their infants.

98% agreed that it is a way of bonding between them and their infants, 95% saw it as a way of feeding their infants a healthy diet, 86% found it as a way of reducing the cost of supplements, and 80% as a way of disease protection for their infants. Nevertheless, 38.0% disagreed that contraceptives have any importance while breastfeeding

According to WHO (2001), 52% of the mothers were knowledgeable about the best timing for complementary feeds but only 37% had done it at right. Zhou et al. (2010) in their study on Chinese mothers living in Ireland investigated how these mothers find and practice complementary feeding and the attitudes they have against it. The study found out these mothers new the benefits of breastfeeding their babies. Previous studies revealed that mothers went against the WHO recommendation of first breastfeeding babies before introducing baby formula and instead introduced formula before breastfeeding. This was because they lacked knowledge of the benefit and nutritional value of breast-milk to their babies. The study suggested creating awareness on breastfeeding in Ireland and provided scientific evidence in support.

In Nigeria, Afolabi et al. (2021) assessed postpartum skills mothers have on complementary feeding. In the study, the sample size was estimated by the use of Fisher's formula so that a simple proportion will be achieved. Mothers were selected through multi-stage sampling. 193 postpartum mothers were the target population which was analyzed by use of SPSS software version 22 at univariate, bivariate, and multivariate levels, whereby $p<0.05$ was significant. From the research finding, percentage of 39.9 % indicated that postpartum mothers did not introduce complementary foods to their infants. They used exclusive breastfeeding. A number of mothers, 28.0% found it viable to introduce complementary feeding when their children were 3 months, 36.3% complementary feeding was started when the child was between 4^{th} and 5^{th} months, 32.1% gradually fed their infants with a small amount of food, 26.4% small appropriate diets,50.3% fed their infants with variety but very minimal diets. Regression analysis reflected a significant association in meal frequency due to complementary feeding skills (OR=2.21; 95% CI: 1.31–3.73, p=0.03), tertiary education (OR=0.18; 95% CI: 0.05–0.59, p=0.01) and household food security (OR=0.49; 95% CI: 0.26–0.94, p=0.03). There was a significant association between small quantity and appropriate diet with the knowledge mothers had acquired in complementary feeding (OR=2.67; 95% CI: 1.38–5.14, p=0.003) and highest educational level (OR=0.11; 95% CI: 0.02–0.71, p=0.02).

Umugwaneza et al. (2021) in Rwanda did a study on feeding practices in children aged 6–23 months. The study was cross-sectional descriptive and qualitative where mothers in groups of ten formed focus groups. The same was done differently in fathers, grandfathers, and community health workers (CHWs). This focused discussion was done in five different districts in Rwanda. The researcher recorded the discussion to ensure credibility and reliability Data was analyzed using Atlas.ti. In participation were, mothers, fathers, and grandmothers with 6-23 months old children. Care givers in the department of child health were also included. The knowledge and skills caregivers had, what they believed in about breastfeeding, and the start of complementary food were found to be the major facilitators in good infant health and growth. Caregivers commonly belief that the first foods an infant should be given are liquids instead of giving infants semi-solid food. This is becoming a threat to feeding practices adopted for their infants. When mothers throng as a group, the community health facilitator was invited to give a counseling session and enlighten them on proper complementary practices. In the society poor surroundings were a challenge in

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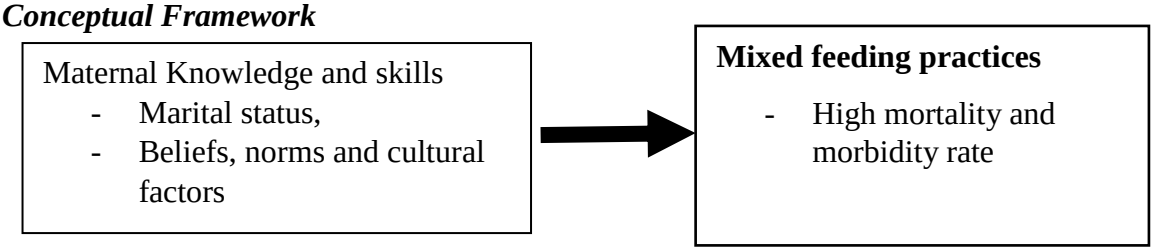
administering optimal feeding practices. The study found that caregivers needed to be educated on complementary feeding and other health benefits of exclusive breastfeeding.

2.1Conceptualization

Figure 1:

Conceptual Framework



Independent Variables **Dependent variable**

3.0 METHODOLOGY

3.1 Research design

A descriptive research design was adopted since it reveals what happens in the review in consideration of the variable of interest.

3.2 Target population and Sample size

The target population comprised breastfeeding mothers with 0-6 months' children who visited Wajir County Referral Hospital MCH, Barwaqo,Alimaow,and AIC health centers. This comprised mothers who only visited these facilities for immunization and postnatal services. Therefore, the target population for this study was a total of 802 breastfeeding mothers/caregivers which include 361 from Wajir County Referral Hospital MCH, and 159 from Barwaqo. 161 from Alimaow and 121 AIC health centers. The target population is shown in Table 3.1.

The key variable addressed in deciding the sampling size is the necessity to keep it manageable, referring. It allowed the study, in terms of time, finances, and money, to extract comprehensive information from it at manageable expenses. The study utilized Krejcie and Robert's (1976) formula to determine the sample size. The study adopted the following formula.

$S = X^2NP(1-P) \div d^2(N-1) + X^2 P(1-P)$

S = sample size
X^2 = the table value of chi-square for 1 degree of freedom at the desired confidence level (3.841)
N = the population size.
P = the population proportion (assumed to be .50 since this would provide the maximum sample size).
d = the degree of accuracy expressed as a proportion (.05).
$S = X^2NP(1-P) \div d^2(N-1) + X^2 P(1-P)$
$S = 3.841*802*0.5(1-0.5) \div 0.05^2 *(802-1) + 3.841*0.5(1-0.5)$
$S = 3.841*802*0.25/ 0.05^2*801 + 3.841*0.25$

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S = 260

From the calculation, a sample size of 260 was arrived at indicating that 260 breastfeeding women were selected. Sample size distribution is indicated in Table 1.

Table 1: ***Sample Size***

Health Facility	Population (F)	Ratio (R) = n/F	Sample size (n) =F*R
Wajir County Referral Hospital MCH	361	260/802 = 0.324	117
Barwaqo Centers	159	260/802=0.324	52
Alimaow Centers	161	260/802=0.324	51
AIC health Centers	121	260/802=0.324	40
Total	**802**	260/802=0.324	**260**

Source: Researcher (2023)

3.3 Data Analysis and Presentation

Data entry was done on SPSS version 26. Cleaning of the data was done by checking on consistency, completeness, and double counting. To establish the relationship between maternal knowledge, socio-cultural factors, feeding practices and economic factors and mixed feeding practices chi-square analysis was conducted. This was conducted with the help of Statistical Package for Social Science (SPSS) version 26 for Windows. Analysis was conducted at 95% confidence interval whereby p-values of 0.05 or less were taken to indicate significant associations.

4.0 RESULTS

4.1 Demographic Characteristics of Respondents

Socio-demographic characteristics assessed in the study include age, marital status, level of education, the person living with the breastfeeding mothers, employment status, and household size. The results are presented in Table 4.2. Results show that 96(41.0%) were between 36-45 years, and 41 (17.7%) were aged between26-35years and 18-25 respectively. The average age was 20 years. These findings show that the majority of women were aged between 15 and 45 years. This may be attributed to the fact that this is the age at which many women get married and have children in the study area as supported by findings in Table 4.2. The majority150 (64.2%) were married, 76(32.7%) were single and those who were widows were 3 (1.4%) and divorced 4 (1.7%).

The findings show that 105 (45%), had no formal education, 59 (25.4%) attained primary education level and 69(29.6%) achieved secondary education. The findings, therefore, show that respondents in the study were lowly educated since the majority (70.0%) of them had not acquired postsecondary education. On occupation, a total of 91 (38.9%) of the mothers/caregivers were unemployed, 33 (14%) were pastoralists, 56 (23.9%) were casual laborers and 54 (23.2%) were employed. The lack of employment and low income among the respondents could be attributed to their lack of adequate education to enable them to acquire high-paying jobs.

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A total of 140 (60%) lived with their husbands, 42(18.2%) lived alone whereas51 (21.8%) lived with their parents or relatives. On parity, results in Table 4.2, most households that were visited had a household size of 4-6 members 117 (50.2%), 83 (35.5%) had a household size of 1 to 3 members whereas33 (14.2%) were in a household of more than six members. This shows that the majority of households had large families.

Table 1: ***Demographic Characteristics of the Respondents*** **(n= 233)**

Age of mother/caregiver	**Frequency(n)**	**Percentage(%)**
15-17	27	11.8
18-25	41	17.7
26-35	41	17.7
36-45	96	41
46–49	27	11.8
Marital status	**Frequency(n)**	**Percentage(%)**
Married	150	64.2
Single	76	32.7
Widow	3	1.4
Divorced	4	1.7%
Education level	**Frequency(n)**	**Percentage(%)**
No formal education	59	25.4
Primary	105	45.0
Secondary	69	29.6
Who the mother Lives with	**Frequency(n)**	**Percentage(%)**
Husband	140	60.0
Alone	42	18.2
Parents/relatives	51	21.8
Employment status	**Frequency(n)**	**Percentage(%)**
Unemployed	91	38.9
Pastoralist	33	14.0
Casual	56	23.9
Employed	54	23.2
Household size	**Frequency(n)**	**Percentage(%)**
4-6	117	50.2
1-3	83	35.5
>6	33	14.2

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4.2 Maternal/caregivers' Knowledge of Mixed-Feeding Practices

Since this study targeted mothers/caregivers of infants below six months, the researcher sought to establish the caregivers' knowledge of the generally recommended complementary feeding indicators according to Maternal Infant and Young Child Nutrition (MIYCN) guidelines.

4.2.1 Caregivers' Knowledge of General Mixed Feeding

On general caregivers' knowledge of general complementary feeding for children with normal nutrition status, the findings reveal that 53% of the mothers could identify at least three benefits of breastfeeding, and 59% knew that a child should continue breastfeeding for at least 24 months. Most of the caregivers (78%) knew that a child should be introduced to solid, semi-solid, and soft foods at 6 months of age. Concerning meal frequency, 24.2% of the caregivers with children 6-8 months of age knew that a child 6-8 months of age should be fed at least 2 times a day; while 65.8% of the caregivers with children 9-23 months of age, knew that a child aged 9-23 months should be fed at least 3times in a day. Only 21% of the caregivers knew that they should breastfeed the child more frequently and give additional servings of nutrient-dense foods during the child's illness (Table 3).

Table 3: ***Caregiver's General Knowledge of Mixed Feeding*** **(n = 137)**

	Frequency(F)	Percentage (%)
Breastfeeding:		
Caregiver identified at least 3 benefits of Exclusive breastfeeding for the first six months	123	53.0
If a child is not getting enough breast milk, the mother should ensure proper positioning and attachment and increase the frequency of breastfeeding.	37	16.0
A child should continue breastfeeding for 2 years and beyond	137	59.0
Mixed Feeding		
Time of Introduction to Mixed Feeding		
A child should be introduced to CF at 6 months of age	182	78.0
Minimum Meal Frequency		
A child 5-6 months (N=33) of age should be fed at least 2 times a day	56	24.2
Minimum Dietary Diversity		
Animal source foods should be included in a 6–23-month-old child's diet	103	44.0
Giving vitamin A-rich fruits and vegetables is beneficial to a child 6 months of age	37	16.0
Bottle feeding		
Mothers should avoid feeding their babies using a bottle with a teat	162	69.5
Feeding During Illness		

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Breastfeeding should be increased and additional nutritious food given to a child during illness	49	21.0
Energy Density in Mixed Feeding		
Sugar and oil may be added to a child's food during Complementary feeding to enhance energy density	168	72.0

4.2.2 Maternal/caregivers' Knowledge Score on Mixed Feeding

Mothers'/caregivers' knowledge of mixed feeding was based on two scales ("1", "0"). A score of "1" was awarded for a correct response while a score of "0" was awarded for a wrong response and a total score was computed for each mother out of a maximum score of 12. The mothers'/caregivers' knowledge of mixed feeding was categorized into three; low for those who had a score of 1-6; average for those with a score of 7-9 and high for those who scored >10. Two-thirds (63.1%) of the mothers had low knowledge of mixed feeding, close to one-third (33.5%) of the mothers had average knowledge whereas a few (3.4%) of the mothers had high knowledge of mixed feeding practices. The mean knowledge score for all mothers on mixed feeding was 6.8, (±1.7) out of a total score of 12and scores ranging from 3to 10 (Table 4).

Table 4: ***Maternal Knowledge of Mixed Feeding Practices*** **(n=233)**

Maternal knowledge score	**Frequency (F)**	**Percentage (%)**
Score categories:		
Low knowledge [0-6]	147	63.1
Average knowledge [7-9]	8	3.4
High knowledge [10-12]	78	33.5
Mean knowledge score (SD) Range 6.47,(1.6),(3-10)		

The overall mean maternal knowledge score on complementary feeding was 6.8, (±1.7) out of a total score of 12 and scores ranging from 3 to 10 (Table 4).

The Focus group discussions with the caregivers revealed that many mothers were not aware of how frequently babies should be fed in a day, hence they fed according to their judgment and observation of older mothers' practices. Moreover, some mothers were not sure whether their babies were fed the required number of times when left at the daycare center since they had to go and work and leave the baby to be fed by the caretaker.

One of the caregivers reported*, 'I am not aware of how many times a child should be fed at a specific age, but I have been giving my child food guided by my judgment on what portion and how many times it is appropriate to feed him.' Mother5, FGD3, 2023.*

The researcher also determined the minimum dietary diversity (MDD) knowledge among caregivers. Slightly above half of the caregivers (56.0%) with children 6-8 months did not know that animal-source foods and legumes should be introduced to their babies in that age bracket. Only 44.0% of the caregivers mentioned that the child should be given animal-source proteins. Only 16.0% of the mothers knew the importance of giving vitamin A-rich food to a child. Seventy-two percent of the caregivers knew that sugar and oil may be added to a baby's complementary food to enhance energy density.

5.0 DISCUSSION

The findings, on the low level of knowledge on mixed feeding, concur with those found by Awuuh, Appiah and Mensah(2019), where most mothers/caregivers of children admitted for treatment of protein energy malnutrition (in Nigeria), often missed nutrition education sessions during child welfare clinics, hence demonstrated low level of knowledge.

Findings similar to this were also documented in Kilifi Maternal Infant and Young Child Nutrition (MIYCN) KAP survey (MOH & UNICEF, 2017) caregivers with low levels of education had low mixed feeding knowledge. This study in Kilifi, however, was among caregivers of children 0-23 months of age regardless of their nutrition status. Different findings, however, were noted from a study conducted in Samburu County, where, even though the majority of the mothers/caregivers were not formally educated, they demonstrated a high complementary feeding knowledge (MOH & UNICEF, 2018). This may be attributed to the fact that Samburu, being an ASAL area, was, then, an area of focus for different organizations. Through this support, there was much emphasis on MIYCN education by CHVs and health workers at community and household levels. Similarly, in the 2018 MIYCN KAP Survey in Marsabit (USAID & Food for the Hungry, 2018), mothers'/caregivers' knowledge of mixed feeding was much higher than that in this study, despite a higher percentage of them being illiterate. Like is the case in Samburu, Marsabit, being an ASAL area worst hit by drought in 2017, received much donor support in health systems strengthening and integrated health and nutrition outreaches, in which the caregivers received nutrition education/sensitization on MIYCN in their language and by their local health care workers'/Community health volunteers.

6.0 CONCLUSION

Overall, the caregivers' knowledge of all the mixed feeding indicators for a child with normal nutrition status was low. The knowledge was particularly low on continued breastfeeding, minimum meal frequency, minimum dietary diversity, and on how to feed a child during illness. Knowledge score at the time of introduction to mixed feeding and on giving vitamin A-rich fruits and vegetables was however high.

7.0 RECOMMENDATIONS

The county Department of Health of Wajir, through the nutrition unit, needs to scale up Social Behavior Change Communication (SBCC) on mixed feeding targeting caregivers of children below 6 months of age with appropriate MIYCN information. The primary focus should be on continued breastfeeding, minimum meal frequency, and minimum dietary diversity. This agenda should be addressed primarily by the MOH in collaboration with implementing partners (IPs) so that all caregivers including those with malnourished children have access to and comprehend IYCF information.

Nutrition programs should put into consideration the cultural beliefs and food taboos that hinder optimal IYCF practices but also encourage those that enhance appropriate complementary feeding.

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